

WHAT IS CLAIMED IS:

1. A method of modulating oocyte activation, the method comprising:
administering a modulator of nitric oxide levels to said oocyte.
- 5 2. The method according to Claim 1, wherein said administering step is performed in combination with fertilization of said oocyte.
3. The method according to Claim 2, wherein said oocyte is a mammalian oocyte.
- 10 4. The method of Claim 3, wherein said oocyte is a human oocyte.
5. The method of Claim 2, wherein said modulator of nitric oxide levels is a NOS inhibitor, and wherein said administering step prevents oocyte activation.
- 15 6. The method of Claim 5, wherein said administering is performed *in vivo*.
7. The method of Claim 6, wherein said inhibitor is administered as a vaginal formulation.
- 20 8. The method of Claim 2, wherein said modulator of nitric oxide levels is NO, an NO donor, NOS, or inducer of NOS, and wherein said administering enhances oocyte activation.
- 25 9. The method according to Claim 8, wherein said administering is performed *in vitro*.
10. The method according to Claim 8, wherein said administering is performed *in vivo*.
- 30 11. A method of preventing fertilization of an oocyte for contraception, the method comprising:
contacting an inhibitor of nitric oxide synthase with said oocyte prior to fertilization,
wherein said oocyte is prevented from activation.

12. The method of Claim 11, wherein said inhibitor is administered as a topical formulation.

13. The method of Claim 11, wherein said oocyte is a human oocyte.

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14. A method of enhancing oocyte activation, the method comprising:
contacting said oocyte with at least one of: nitric oxide synthase, a precursor of nitric oxide, and an enhancer of nitric oxide synthase expression, wherein said oocyte is activated to re-enter the cell cycle.

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15. The method according to Claim 14, wherein said activation is performed in combination with fertilization.

16. The method according to Claim 14, wherein said activation provide
parthenogenetic activation.

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17. The method according to Claim 14, wherein said activation is performed in combination with nuclear transfer.

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18. The method according to Claim 14, wherein said oocyte is a human oocyte.